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MULTIMEDIA COMPLIANCE INVESTIGATION OBSERVATIONS REPORT

Veolia ES Technical Services
7 Mobile Avenue
Sauget, Illinois 62201
NEIC Project No.: VP0972

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NEIC

CONTENTS

TABLES

FIGURES

The Contents page shows all sections contained in this report and provides a clear indication of the end of the report.

INTRODUCTION

At the request of U.S. Environmental Protection Agency (EPA) Region 5, EPA's National Enforcement Investigations Center (NEIC) conducted a focused multimedia compliance investigation of the Veolia Environmental Services (ES) Technical Solutions, LLC (Veolia) hazardous waste incinerator in Sauget, Illinois. The Veolia facility's mailing address is 7 Mobile Avenue, Sauget, Illinois 62201.

Figure 1 is an image of the Veolia site that was generated from Google Earth Pro. Veolia's waste disposal and incineration operations are subject to several environmental statutes, including the Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA); Clean Air Act (CAA); and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Veolia's operations are subject to environmental permits and regulations administered by the EPA and the Illinois Environmental Protection Agency (IEPA).

The NEIC on-site inspection was conducted December 5 through December 15, 2011. The inspection team included: Alison Ruhs (environmental scientist) Don Smith (chemist), Brad Venner (statistician) from NEIC and Shannon Downey, Sarah Marshall, and Jamie Paulin from EPA Region 5. Credentials were presented to Veolia representatives Doug Harris, Dennis Warshol, and David Klarich.

Figure 1. Google Earth Pro image of Veolia ES Technical Services in Sauget, Illinois (9/1/2011)
Veolia ES Technical Services
Sauget, Illinois

BACKGROUND

Facility Unit Operations Overview

According to Veolia's RCRA permit, Veolia has a maximum total container storage capacity of 1,062,789 gallons of waste and a maximum tank storage capacity of 656,724 gallons. The facility has the following 12 container storage units:

- Drum storage unit 1 with a capacity of 61,490 gallons
- Drum storage unit 2 with a capacity of 90,640 gallons
- Drum storage unit 3with a capacity of 563,200 gallons
- Drum storage unit 6 with a capacity of 36,960 gallons
- A roll-off storage building that can store up to 24 roll-off boxes with a total storage capacity of 96,960 gallons
- A drum decant area with a total capacity of 16,830 gallons

- Material processing area (MP) 1 with a total storage capacity of 15,950 gallons
- MP 2 with a total storage capacity of 4,125 gallons
- Lab pack repackaging building 2B with a storage capacity of 7,700 drums
- A direct inject system at incinerators 2 and 3 with a total storage capacity of 77,920 gallons
- A direct injection system at incinerator 4 with a storage capacity of 60,214 gallons
- A trailer storage pad with a storage capacity of up to 30,800 gallons

Veolia has two tank farms, tank farms 1 and 3. Tank farm 1 is located on the north side of the facility and has 10 tanks. Before stored bulk liquid wastes are incinerated, they are blended at tank farm 1 in tanks 2, 4, 6, and 8, which feed to incinerators 2 and 3. Six additional tanks (10, 20, 30, 40, 50, and 60) at tank farm 1 are used to store different waste streams (typically based on British thermal unit [Btu] value) before they are pumped to one of the four blend tanks that feed the waste to incinerators 2 or 3. Tank farm 3 is located on the south side of the facility, adjacent to incinerator 4, and has eight tanks (300, 302, 304, 306, 308, 310, 312, and 314). The tanks in tank farms 1 and 3 are used to store the liquid organic waste, aqueous wastes, pumpable sludges, and virgin fuel that are fed to the incinerator system. Pumps transfer these wastes and fuel via above-ground pipelines to the incinerators. According to D. Warshol, Veolia environmental, health, and safety manager, the pipelines used to transfer liquid organic waste and aqueous waste are equipped with stainless steel strainers to remove solids that may plug the incinerator nozzles. Operators at each incinerator control rates of feed. The contents of the tanks are mixed and then sampled before they are fed to the incinerators. The samples are tested for Btu value and chlorine. After the analysis is completed, the tank contents are released to the incinerator.

According to Veolia's CAA Title V permit V-IL-1716300103-08-01, the facility operates two fixed-hearth dual-chambered incinerators (units 2 and 3) and one rotary kiln (unit 4). The two fixed-hearth units each are rated at 16 million Btu/hour (hr). According to D. Warshol, incinerator 3 is a mirror image of incinerator 2. According to the Title V permit, the only difference between incinerators 2 and 3 is that incinerator 2 is equipped with four baghouse modules, while incinerator 3 is equipped with three baghouse modules. Incinerators 2 and 3 are designed to receive containers of 40 gallons or less of solid waste and containers of 1 gallon or less of containerized aqueous and/or organic liquid wastes. Additionally, incinerators 2 and 3 have specialty liquid feeds for containers with acute health hazards and a direct inject liquid feed for containers with viscosity, odor, and/or compatibility concerns. Incinerator 2 can also incinerate gases. Each of the fixed-hearth incinerators can also receive liquid wastes from the storage/blend tanks located in tank farm 1.

Incinerator 4 is rated at 50 million Btu/hour and is equipped with its own tank farm system (tank farm 3), drum storage, bulk solids storage, and feed systems. Incinerator 4 is permitted for all forms of bulk waste, as well as containerized waste (including 85-gallon steel drums).

Bulk Liquids Processing

Liquid waste can be blended in bulk tanks before it is incinerated, or it can be directly fed into the incinerators. If the waste is blended in a bulk tank before incineration, a sample is drawn from the tank to be analyzed for the following parameters:

- Heat value – measured to control the feed rates of waste fed into the incinerators.
- Total chlorine content – measured to control the percent chlorine in waste fed into the incinerators
- pH – measured to protect the integrity of tank farm construction materials and provide management data for proper blending
- Specific gravity (s.g.) – measured to ensure that the specific gravity of bulk or decant composite liquid is less than the design specific gravity for the storage tanks (s.g.= 1.5)

Samples of bulk liquids are not analyzed for metals; instead, metals concentrations are calculated based on profile information stored in Veolia's waste tracking system (WTS). The WTS pulls information from the corporate tracking system, called the "I-Series" (discussed in detail in "Waste Characterization Process Description"). Either a value from the profile, or a shipment-specific value based on metals analysis at Veolia's on-site laboratory, is used in the calculation. On-site analyses may be used to update the profile information in the WTS.

Containerized Liquids Processing

Containerized liquids can be processed one of four ways, depending on the nature of the waste and which incinerator unit will ultimately receive the waste: (1) the entire container may be fed (charged) directly to incinerators as it was received, (2) the container may be repackaged into smaller charge boxes, (3) the container may be bulked with similar waste into a tote or a tank for injection into the incinerators, or (4) the container may be directly injected into the incinerator.

Lab-packed liquid wastes usually remain in the original container and are placed with similar waste streams into charge boxes. However, lab packs can also be bulked together (done when original container is greater than 1 gallon) into a tote for injection into the incinerator. Lab-packs are stored in buildings 2A and 2C, and processed in building 2B.

There are four possibilities for managing non-lab-pack containers of liquid waste that are greater than 1 gallon: (1) the entire container can be fed to the incinerator (up to 85 gallons can be fed into incinerator 4), (2) the container can be decanted with a suction wand directly to the incinerator if the material is highly odorous or poses a health hazard, (3) the container can be bulked into a tank or tote for injection into the incinerator (generally smaller containers of less than 5 gallons), or (4) the container can be decanted to plastic-lined cardboard charge boxes at volumes of

1 gallon or less. These containers are processed in material processing areas 1 and 2 (MP1 and MP2).

When smaller containers are bulked into a tote, the combined waste is assigned a "consolidation number" that tracks all the receiver numbers of all the waste that was placed in the tote. The consolidation number is created from the month-day-year when the first volume of waste was placed in the bulking container. Once the tote is full, a sample is taken for mandatory analyses (the same parameters used for bulk liquids) and supplemental analyses. The laboratory values for Btu and metals are used in the feed rate calculation when the tote is injected into the incinerator.

As for containers destined to be bulked into a tank, a sample of each waste is taken before bulking occurs to ensure compatibility. If a "heel" of waste remains in the tank, the heel is also sampled to ensure compatibility. Once all the samples have been taken, they are combined in the laboratory and mandatory and supplemental analyses are performed. Once compatibility testing and mandatory and supplemental laboratory analyses are complete, the containers are decanted to the tank. After the wastes have been bulked into the tank, a final tank sample is taken for analysis of chlorine, viscosity, and Btu value to ensure optimum incinerator performance when the waste is injected. Laboratory staff enter the analytical results performed prior to bulking in the tank into the WTS, and this information, along with the tank volume, is used to calculate the metals values for the tank.

Containerized Solids Processing

Containerized solids are generally processed by repackaging the contents into containers that are suitable for storage and incineration at MP1 and MP2. However, incinerator 4 can directly receive up to 85-gallon drums if the material does not pose a concern with regard to maintaining incinerator operating parameters. Incinerators 2 and 3 can receive up to 40-gallon containers directly.

According to Veolia personnel, the containers to be processed are moved using a forklift from storage, transport trailers, or other processing areas to MP1 or MP2. This container movement is tracked with a bar code scanner that sends the information to the WTS. At MP1 and MP2, operators place the container on a conveyor system. The containers are moved to a tipper system that is used to empty the contents into charge boxes. Operators empty the material from the container into a mixing box by slowly tilting the tipper and using a shovel or other appropriate tool to scrape material out of the container as needed until the container is empty. According to Veolia personnel, any free liquid of more than 1 gallon is absorbed with corn cobs or Dry-All absorbent. A process planner determines the amount and types of wastes placed in each charge box, and the information is included in a process plan for the waste type. According to D. Warshol, the criteria for filling the boxes include Btu value, regulated metals concentrations, presence of reactive

materials, and the size and shape of the material. After the charge boxes are filled, each pallet of boxes is labeled with a "skid card." The skid card includes the words "hazardous waste," the receiver number, the drum number, the date the charges were processed, the crew that processed them, where they were processed, and where they are to be incinerated.

Charge boxes are received at the loading dock located at each dock adjoining each incinerator. The packages are loaded onto a scale, and the receiver number is entered into the incinerator control/processing system (ICS/IPS) system. The container is then introduced into the incinerator through an airlock-ram system located at the lower front of the primary chamber of the incinerator. The airlock is composed of a refractory-lined door adjacent to the incinerator, a door into the airlock enclosure, and a pneumatic ram to push the material into the incinerator. The loading operation can be controlled manually or set to automatic feed by the operator.

Bulk Solids Processing

Only incinerator 4 can receive bulk solids. Before bulk solids are introduced into the incinerator 4 hopper, they are dumped into one of four in-ground pits (pits 1, 2, 3, and 4). According to D. Harris, Veolia general manager, these pits are used for mixing and feeding bulk solids and incinerator ash from incinerators 2 and 3. The ash from incinerators 2 and 3 is incinerated in incinerator 4 to remove excess water. When bulk solids are scheduled for feeding into incinerator 4 from pits 1–4, an operator lowers a clamshell into the pits and grabs the desired amount of material. The clamshell is then positioned above the bulk solids hopper located next to incinerator 4. The operator verifies that the hopper is empty by viewing the feed from the remote camera, observing the indicator light at the clamshell station, or by communicating on the intercom with the incinerator operator in the control room. Once it has been verified that the hopper is empty, the operator opens the clamshell and drops the material into the hopper. The incinerator operator then opens the hopper slide gate, allowing the material to fall into the charge box; closes the hopper slide gate; opens the charge door; and finally extends the ram, pushing the material into the incinerator.

INVESTIGATION OBJECTIVES

The goal of the investigation was to determine Veolia's compliance with CAA and RCRA regulatory requirements. Veolia is subject to maximum achievable control technology standards under 40 Code of Federal Regulations (CFR) Part 63, Subpart EEE – National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors (HWC MACT). Regarding CAA compliance, the NEIC investigation primarily focused on 40 CFR Part 63.1209 (c) (analysis of feed streams). Regarding RCRA compliance, the investigation primarily focused on compliance with the facility's waste analysis plan (WAP).

WASTE CHARACTERIZATION PROCESS DESCRIPTION

Waste Approvals

Veolia uses a corporate-wide waste tracking system called the "I-Series." Waste generators usually work with Veolia Environmental Services North America (VESNA) representatives who begin the waste approval process by entering waste information into the I-Series. The generator fills out a waste profile sheet (WPS), often with the help of VESNA representatives, and the information is entered into the I-Series. VESNA representatives then determine which Veolia facility could manage the waste and work with that facility's approvals department. Typically, Veolia deals directly with the VESNA representatives to obtain the necessary waste information for approval because VESNA provides waste transportation and acts as a broker for numerous generators.

All approval decisions are based on an assessment of several criteria, which are listed in the WAP, Section 4.2. Veolia uses the WAP requirements to determine if further information, such as sample analysis results, is necessary before approving the waste stream. For some generators, Veolia's on-site analytical laboratory also conducts mandatory analysis on the "sale samples" before Veolia approves the waste stream for treatment. Additionally, Veolia's approvals coordinators have created a "dynamic suspect list" of industries and process wastes that could contain volatile/semi-volatile metals (specifically mercury, cadmium, chromium, arsenic, lead, and beryllium) and must be analyzed for metals before the waste stream can be approved. This list continues to grow, according to Kelly Meredith, Veolia approvals coordinator, and Christie Narez, Veolia technical manager.

If the waste stream submitted for approval is similar to waste streams that are already accepted for treatment at Veolia facilities, then a standard profile designation may be used. Standard profile designations are used for waste streams that have similar physical and chemical characteristics, are generated by similar industries or processes, or have the same EPA hazardous waste codes as similar process waste. When a standard profile is used for a waste stream, sampling is not conducted; instead, Veolia uses an analytical database that was developed for that standard profile. The analytical database is based on analytical data from wastes from similar industries or processes. According to C. Narez and D. Warshol, many of the standard profiles used at Veolia are based on historical data obtained by the Veolia facility located in Port Arthur, Texas.

As described in the WAP, Veolia can perform three types of waste analyses: mandatory analyses, supplemental analyses, and blend analyses. Incoming wastes awaiting approval are subject to mandatory analyses, unless a standard profile can be used or if the waste meets an exception from required analyses. Five mandatory analyses are required for waste profile approval: pH, radiation, flash point, polychlorinated biphenyls (PCBs), and apparent viscosity. Supplemental analyses are performed to further identify wastes and are performed if the waste stream is suspected of containing constituents such as metals or PCBs. Facility management, along with the approvals department,

determines if supplemental analyses are necessary. Blend analyses are used to determine the liquid blend characteristics in order to maintain a steady state (normal) operation of the incinerator. Blend analyses are typically performed after approval, once the waste is received, and is scheduled to be bulked into a tote or tank.

Ten categories of wastes are exempted from sampling requirements, as outlined in the WAP. One of these categories is commercial products or chemicals, such as off-specification, outdated, unused, or banned chemicals that are in the original container or package. Another category is wastes that are identifiable through a visual inspection process, such as batteries, filters, and filter cartridges. A third category is non-hazardous waste for which the generator has provided analytical data to support the determination.

Waste Acceptance

Once Veolia has approved a waste stream profile, the waste may be delivered to the facility. VESNA representatives schedule waste shipments to Veolia in the I-Series, and Veolia's material acceptance group (MAG) prints the daily shipping schedule every morning. MAG personnel compare the manifested profiles of wastes that are received at the facility to the schedule to ensure that each load is scheduled. Once the waste stream has been verified on the schedule, the profile information is downloaded from the I-Series into the WTS for waste tracking on-site. A receipt number for each manifested line item (waste profile) is sequentially generated during waste receiving and is used to track the waste stream throughout its on-site processing. The receipt numbers are written on the shipping document for each line item and on each receipt packet. A customer service representative (CSR) must resolve any waste profiles that are not approved.

Veolia visually inspects and samples waste, according to the WAP, before a waste stream can be accepted, unless the waste stream is exempt from inspection and sampling, as discussed previously. Containers of wastes are sampled and analyzed after receipt at receiving building 3. Ten percent of containers from each receipt number (profile) within a shipment are randomly sampled. Mandatory analysis is performed on all samples, and additional analysis may be required. If multiple samples are taken from the same waste profile, up to five samples can be composited for analysis according to the WAP.

Section 5.2 of the WAP describes how non-conforming waste is managed. If a discrepancy is discovered, the following Veolia personnel can initiate a discrepancy report:

- Customer service supervisor (CSS)
- Lab personnel
- Receiving technicians and/or supervisor
- MAG personnel
- Sales coordinators
- Tank farm technicians and/or supervisor
- CSRs

C. Narez contacts the waste generator or waste broker to resolve waste discrepancies. One-time discrepancies typically are noted on the paperwork, and any changes in handling are tracked in the I-Series. If the discrepancy occurs again, then the profile is either changed or a new profile is created to better represent the waste stream. Once the received waste stream has been verified, it can be accepted for incineration processing.

On-site Laboratory Process Overview

Veolia's on-site analytical laboratory performs waste analysis as required by Veolia's WAP and feedstream analysis plan (FAP). The laboratory is equipped with two ion chromatograph (IC) instruments for measuring total halogens, two inductively coupled plasma- atomic emission spectrometers (ICP-AES) for measuring metals, two gas chromatographs (GCs) for analyzing samples for PCBs, and two bomb calorimeters for determining the Btu content of wastes.

Samples of received wastes are assigned a unique, sequential laboratory identification number that is generated on the basis of when the sample is received at the laboratory. The laboratory identification number is entered into a laboratory database. The laboratory identification number and the associated analytical results are entered into the WTS under the waste receiver numbers associated with that laboratory sample.

The Veolia on-site laboratory performs tests on samples of generator waste samples (sale sample) before approval, incoming accepted wastes, and some on-site-generated wastes. The primary tests conducted by the laboratory are: WAP-required fingerprint testing (mandatory analyses), supplemental analyses (including volatile/semivolatile metals analysis), and blend analyses. Blend analyses and supplemental analyses are only performed if the profile paperwork indicates these analyses are required.

At a minimum, incoming wastes are subjected to 11 mandatory analyses:

- Physical description
- pH screen
- Oxidizer screen
- Radioactivity screen
- Flammability potential screen
- Paint filter test
- Liquid waste compatibility (water mix)
- Heat value (Btu)
- Chlorine content
- Cyanide screen
- Sulfide screen

Five of these mandatory analyses may not be performed due to the nature of the waste stream. Cyanide and sulfide screening are not performed on wastes with a pH less than or equal to 2. The water mix screening is not necessary for wastes already in contact with excess water. Heat value and chlorine content are not measured on liquid decant drums. Liquid waste compatibility testing is performed on samples of liquid wastes for compatibility before the wastes are added to other wastes in tanks and containers. Samples of liquid wastes are added to each other in proportion to the bulk quantities of the wastes. During the addition, the generation of heat, fire, explosion, or violent reaction is noted by the analyst.

The laboratory uses bomb calorimetry to determine Btu content. The bomb washings from the calorimetry determination are diluted and analyzed by ion chromatography for total halogens as chloride, fluoride, bromide, and iodide. Only the chloride result, as total chlorine, is entered into the feed rate calculation. Veolia determines the concentration of semivolatile metals (SVM) and volatile metals (VM) by microwave digestion and dilution followed by ICP-AES analysis. The facility has two ICP spectrometers that use a radial viewing of the plasma and simultaneous optical spectrometry for determining the trace elements—arsenic, beryllium, cadmium, chromium, and lead—and for mercury screening in acid-digested solutions of waste samples.

Veolia Feedstream Rate Determination

Several feed stream constituents have maximum feed rate limits specified in the HWC MACT standard, including:

- Chlorine and chloride
- Semivolatile metals (cadmium and lead)
- Low volatility metals (arsenic, beryllium, chromium)
- Mercury
- Ash

According to D. Warshol, metals and ash concentrations for feed streams are entered into the WTS. These feed streams are identified in the WTS under a receiver number, bulk pit number, or tank number. Once this information is in the WTS, the incinerator control systems (ICS) are able to import and store the data for use as the waste streams are processed at the incinerators. All waste introduced into the incinerators has an associated site receiver number so it can be referenced to the appropriate data from the WTS. As weights are recorded at 15-second intervals for each specific waste stream entering the incinerator, computations are performed to calculate the quantities of metals (as low volatile metals, semivolatile metals, and mercury) and ash that are being incinerated. These quantities are displayed to the incinerator operator and recorded. One-hour and 12-hour rolling totals are displayed for the incinerator operators to monitor these feeds.

NEIC Feed Stream Evaluation

NEIC evaluated Veolia's process for determining feed rates for compliance with the HWC MACT standard limits for chlorine and metals. The evaluation included an examination of laboratory methods and procedures, informational queries of the WTS database to evaluate how metals and chlorine values were established in the waste profiles, and an examination of select profiles based on the results of the database queries. According to D. Warshol and C. Narez, there are four sources of analytical information that Veolia can use in evaluating the feedstream parameters including:

- Analysis performed on-site by Veolia
- Analysis performed off-site
- Manufacturer data or other published information such as material data safety sheets (MSDS)
- Generator process knowledge

According to D. Warshol, the following criteria are used in determining whether or not the Veolia laboratory will conduct metals analysis (supplemental analysis) on a waste:

- The waste has RCRA waste codes
- The chemical composition of the waste provided by the generator
- The process generating the waste
- An internal list of suspect wastes (dynamic suspect list)
- Brokered waste (third party)

To evaluate the process for determining waste feed concentrations for metals, NEIC requested Veolia to conduct a query of the WTS database to compare the portion of waste profiles that were tested by the on-site laboratory to those that were not. This query was performed on wastes received in 2011 (January 1 through December 15, 2011), 2010, and 2009. Additional queries were performed for waste received in 2011, 2010, and 2009 to better understand why certain wastes were sampled and analyzed for metals, while others were not. Table 1 summarizes the total number of profiles for a particular year that met a particular query criteria.

Table 1. SUMMARY OF TOTAL WASTE PROFILES MEETING SPECIFIED CRITERIA FOR 2009, 2010, AND 2011
Veolia ES Technical Services
Sauget, Illinois

Year	Total Profiles Received	Profiles with No On-site Metals Analysis	Profiles with No RCRA Metals Codes	Profiles With No RCRA Metals Codes and No On-site Metals Analysis	Profiles with No RCRA Metals Codes but with On-site Metals Analysis
2011	4747	907	1131	881	250
2010	5185	1043	1116	876	240
2009	4396	1039	1051	973	178

NEIC began its evaluation by reviewing waste profiles received in 2011 (January 1 through December 15, 2011) with RCRA metals codes but for which on-site analyses were not performed. Of the 907 profiles that were not analyzed for metals, 881 did not have RCRA metals codes. This left 26 profiles, according to the WTS, that were not analyzed for metals even though the waste stream had RCRA metals codes. C. Narez printed out the list of profiles that carried RCRA metal codes but for which on-site analyses were not performed. This list had 28 profiles instead of 26, because the WTS database query generated two profiles that did not have RCRA metals codes. K. Meredith and C. Narez went through 17 of the 28 profiles with NEIC inspectors during the on-site inspection. Information on the remaining 11 profiles was provided following the inspection. After review of all the information provided, 19 profiles had on-site metals analysis in the hard-copy file, but the metals information was entered in the approvals screen rather than the laboratory screen. Five of the profiles had been analyzed sometime in the past by the Port Arthur, Texas, Veolia, facility. Two profiles were analyzed by an off-site laboratory, and the metals concentrations for two profiles were based on generator knowledge but no analyses were performed. Both profiles 396651

and 008509 used generator knowledge; however, these profiles should not have been included in the RCRA metals codes group based on information provided by Veolia after the inspection. Table 2 shows the profiles that had on-site analysis, historical data, off-site analysis, or generator knowledge data.

Table 2. WASTE PROFILES WITH RCRA METALS CODES THAT WERE NOT ANALYZED ON-SITE ACCORDING TO the WTS – FACILITY EXPLANATION
Veolia ES Technical Services
Sauget, Illinois

Year	Do *In Fact* Have On-site Analyses	Historic Analyses (Port Arthur, TX)	Off-site Analyses (Commercial Laboratory)	Other (Process Knowledge, MSDS, etc.)
2011 Profiles	157062 272684 323990 360041 374339 388852 554343 554347 565601 566491 567423 581780 660210[1] 760266 346628 ELSOL3 FSSOL3 LOP005 WSOL03	CI5789 693128[2] ELLIQ3[2] WBA501[2] WLIQ03[2]	M57062 360069	008509[2,3] 396651[3]

[1] Veolia conducted on-site supplemental metals analysis after the NEIC inspection.
[2] Veolia intends to conduct on-site supplemental metals analysis the next time these profiles are received.
[3] These profiles do not contain RCRA metals codes.

By December 2011, 881 profiles had been received in 2011 that did not contain RCRA metals codes and had not been analyzed for metals. Many of the waste names and process descriptions used to describe the 881 profiles in the WTS were generic and somewhat ambiguous. NEIC sorted the list of waste streams by largest volume in order to obtain more information on the higher volume wastes with generic descriptions. From the larger volume waste streams, NEIC inspectors briefly reviewed 26 profiles on-site based on the waste name and generator process description. K. Meredith and C. Narez explained the information provided in the hard-copy files for each selected profile. Table 3 summarizes the 26 high-volume wastes NEIC inspectors reviewed briefly while on-site.

Table 3. SUMMARY OF HIGH-VOLUME WASTE PROFILES RECEIVED IN 2011 THAT WERE REVIEWED ON-SITE
Veolia ES Technical Services
Sauget, Illinois

Profile	Waste Name in the WTS	Process Generating Waste in the WTS	Quantity Received Jan – Dec 15, 2011 (Gallons)

Table 3. SUMMARY OF HIGH-VOLUME WASTE PROFILES RECEIVED IN 2011 THAT WERE REVIEWED ON-SITE
Veolia ES Technical Services
Sauget, Illinois

Profile	Waste Name in the WTS	Process Generating Waste in the WTS	Quantity Received Jan – Dec 15, 2011 (Gallons)
397628	DE175 - IPA WASH & FILTRATE WA	CHEMICAL MANUFACTURING	554,958
388522	MOTHER LIQUOR RESIDUE	PROCESS WASTE FROM MANUFACTURING OF INERMEDIATED HERBIC	251,245
076148	FORMULATION AQUEOUS W/ OR W/O	PROCESS WASH WATER	230,602
330470	RINSEWATER-ACUTE TOXIC	CONTAINER CLEANING	55,591
076886	DECON WATER-TREATED VX & GB TO	DECON OF CHEMICAL WEAPONS RECOGNITION TRAINING COMPLEX.	52,372
127773	WR-120S OVER 3MP CONCENTRATE	PROCESS WASTE	29,828
AF4699	RINSE WATER	CLEANING OUT AN HERBICIDE PLANT	27,395
BJ3050	LABORATORY GC/HPLC VIALS AND D	LABORATORY ANALYSIS ACCUMULATION	24,500
104147	FORMULATION AQUEOUS COMBO	PROCESS WASH WATER	24,442
PZLOP3	LOOSE PACKS OF NON-REGULATED M	UNUSED PRODUCTS OR USED MATERIALS	21,404
075342	554 PAINT BOOTH FILTERS	PAINT BOOTH FILTER CHANGE OUT	19,250
375309	FORMULATING & PROCESS BIPRODUC	PESTICIDE MANUFACTURING	16,775
131690	MARS D-1200 TAR TANK WASTE	PRODUCTION PROCESS WASTE	15,228
JJLP03	NON REG MATERIAL - LOOSE PACK	UNUSED PRODUCTS OR USED MATERIALS	13,880
048932	XM-077352 ORGANOMETALLIC SOLID	METALORGANIC MANUFACTURING	11,685
164854	CARBON WITH 1107 FLUID	CARBON WITH RESIDUAL CONTAMINATION AFTER MOST OF FLUID REMOVED BY NITROGEN FLUSH	11,600
ELSOL3	SOLIDS CHLORINE <25%	INDUSTRIAL CLEANING, R&D, LAB WASTE, MACHINING OPERATIOANK CLEAN-OUTS	10,744
AF3753	MERCURY CONTAMINATED SOLIDS	THIMEROSAL FILTERING, COLLECTING AND STORING	10,230
388582	GANTREZ S SOLUTION	OFF-SPEC SOLUTION	9,985
236152	CARBON WITH CHROME	DISCARD OF USED CARBON FILTER MEDIA	9,090

Table 3. SUMMARY OF HIGH-VOLUME WASTE PROFILES RECEIVED IN 2011 THAT WERE REVIEWED ON-SITE
Veolia ES Technical Services
Sauget, Illinois

Profile	Waste Name in the WTS	Process Generating Waste in the WTS	Quantity Received Jan – Dec 15, 2011 (Gallons)
008509	CARBON W/HALOGENATED ORGANICS	PROCESS BY PRODUCT	8,349
127318	POWDER PAINT WITH BENZENE	POWDER COATING METAL PARTS	7,205
BZ3601	MERCK (PA) - TOLUENE/AVERMECTI	SPILL CLEANUP	7,050
442913	DEBRIS ARSENIC	SEMICONDUCTOR MANUFACTURING/EQUIPMENT CLEANING	6,600
BS1067	WASTE VOC SLUDGE	GRAVITY SEPARATION OF LEACHATE FROM NON-CERCLA REMEDIAT	6,396
075231	RED DUST W/TRACE FUNGICIDES/IN	DUST CREATED BY APPLICATION OF FUNGICIDE & INSECTICIDE SEED CORN IN PLANT. COLLECTION SYSTEM REMOVES DUST FROM	5,885

Several profile files were photocopied and reviewed more thoroughly following the inspection. Six of the complete profile files for select waste streams from Tables 2 and 3 had conflicting information with respect to metals values in the WTS compared to the hard-copy file. Table 4 lists the six profiles with concerns regarding how the metals values were established in the WTS.

Table 4. LIST OF PROFILES WITH CONCERNS REGARDING HOW THE METALS VALUES WERE ESTABLISHED IN THE WTS
Veolia ES Technical Services
Sauget, Illinois

Profile	Generator/Waste Source	Waste Type	Initial Date	Metal	TCLP (mg/L)	Total Metal Concentrations (mg/kg)	Value used in the WTS	Value used in IPS/ICS	Gal/Year	Comments: Source of Value Used
236152	Praxair Inc. / Calgon	Spent Carbon	Mar-06	Cr	11.4	30000	None	228	9,090	1) Total Cr = 3% - 6% (30000 – 60000 mg/kg) Chromium Trioxide based on a 3/21/2006 MSDS provided in profile package. 2) TCLP values from offsite analytical (SGS Environmental Services, Inc. on 3/24/2006) was 11.4 mg/L for Cr, and 0.876 mg/L for Cd. Veolia stated that 20 times TCLP values were used (228 and 17.52 mg/L) for the incinerator feed rate calculations (although there are no values in the WTS query provided to NEIC). 3) Veolia is going to sample the wastestream in the future.
				Cd	0.876		None	17.52		
691163	L-3 Corp Combat Prop Systems / Painting Of M1 Abram Tank Parts	Paint Booth Waste Purge & Non	May-05	As	<0.10 mg/L		0	0	935	1) Cr is likely much greater than 20 times the TCLP concentration of
				Be			0	0		
				Cd	<0.10		0	0		

Table 4. LIST OF PROFILES WITH CONCERNS REGARDING HOW THE METALS VALUES WERE ESTABLISHED IN THE WTS
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Sauget, Illinois

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	And Flushing Of Sprayer				mg/L					1.8mg/L (6/9/2005 offsite analysis result in profile package). 2) Veolia stated that the process generating the waste is not suspected of containing MACT metals. No onsite metal analyses has been conducted
				Cr	1.8 mg/L		0	0		
				Pb	<0.40 mg/L		0	0		
				Hg	<0.002		0	0		
660210	Veolia – Azuza / Unused Materials From TSDF Transhipment, Consolidation	Cyanide Loosepack		As	<5	5	5	5	3,740	Used Port Arthur, TX analytical. Veolia ran metals analysis after the NEIC inspection. Profile stated that the waste contains cadmium cyanide. Since this is a broker type waste, some shipments may have very high Cd.
				Be		0.1	0.1	0.1		
				Cd	<1	1	1	1		
				Cr	<5	2.5	2.5	2.5		
				Hg	<.2	0	0	0		
				Pb	<5	2.5	2.5	2.5		
CI5789	Burlington Environmental Inc. / Cyanide Consolidation From Outside Sources	Cyanide Mixture Solution		As			200	<5	14,281	Port Arthur, TX analytical value of 6470 ppm Cd has been used since 1999. No values in the WTS query provided to NEIC. According to Veolia the waste has been analyzed onsite
				Cd		6470	None	4941		
				Cr			200	23.8		
				Pb			200	6.7		
				Hg			0	<0.2		

Table 4. LIST OF PROFILES WITH CONCERNS REGARDING HOW THE METALS VALUES WERE ESTABLISHED IN THE WTS
Veolia ES Technical Services
Sauget, Illinois

Profile	Generator/Waste Source	Waste Type	Initial Date	Metal	TCLP (mg/L)	Total Metal Concentrations (mg/kg)	Value used in the WTS	Value used in IPS/ICS	Gal/Year	Comments: Source of Value Used
										and total metals values are used for the incinerator feed rate calculations.
AF3753	Boehringer Ingelheim Vetmedica / Thimerosal Filtering, collecting and storing	Mercury contaminated solids	Jul-93	Hg	37.8	4140	0 – 25	25	10,230	7/23/93 and 11/16/93 TCLP (on profile) = 37.8 mg/L. 7/23/93 Total mercury (on profile) = 4140. 12/30/04 and 2/14/07 TCLP ">= 0.2 mg/L". According to Veolia total mercury analysis was measured and the measured value of 25 ppm is used for the incinerator feed rate calculations, rather than the profile values stored in the WTS. However, since the historical data in the profile indicates a mercury value as high as 4140 mg/kg, this waste stream should be analyzed each time it is received.

Table 4. LIST OF PROFILES WITH CONCERNS REGARDING HOW THE METALS VALUES WERE ESTABLISHED IN THE WTS
Veolia ES Technical Services
Sauget, Illinois

Profile	Generator/Waste Source	Waste Type	Initial Date	Metal	TCLP (mg/L)	Total Metal Concentrations (mg/kg)	Value used in the WTS	Value used in IPS/ICS	Gal/Year	Comments: Source of Value Used
374339	Environmental Enterprises / Consolidated at TSDF	Organic Debris	Jan-04	As	<5		None	5	76,760	According to Veolia total metals analyses was run onsite and total MACT metals used for IPS/WTS. This is a variable waste stream that should be analyzed each time a load is received.
				Cd	<1		None	5		
				Cr	<5		None	5		
				Hg	<0.2		None	0		
				Pb	<5		None	5		
				Be	<10		None	10		

In general, the evaluation of the profiles listed in Table 4 revealed three major concerns regarding Veolia's waste characterization protocols.

- **The use of toxicity characteristic leaching procedure (TCLP) results instead of total metals concentrations**: Some of the profile packages reviewed contained metals values that were based on TCLP analysis instead of total metals analyses. For profile 236152, TCLP values were used to calculate the total chromium and cadmium feed rates in the ICS. This calculation is based on Veolia's application of the "20 times rule" because of the 1:20 dilution used in the TCLP test. This rule cannot be used when attempting to derive total concentrations from TCLP because the ratio of 20 assumes that the material being analyzed by TCLP is completely soluble. The result of misapplication of the 20 times rule is an underestimation of actual metals concentration in the waste. Veolia is using a chromium value of 228 milligrams per kilogram (mg/kg) and a cadmium value of 17.52 mg/kg for profile 236152. However, a material safety data sheet in the profile package listed a total chromium oxide value of 30,000 to 60,000 mg/kg. Profile 691163 has a TCLP value for chromium of 1.8 (milligrams per liter [mg/L]), but the WTS and ICS used a chromium value of 0 mg/L. This result may greatly underestimate the actual chromium concentration for this waste stream.
- **Overly broad profiles**: NEIC reviewed several profiles that were based on general processes that did not consider the possibility for variability in volatile or semivolatile metals concentrations. For example, profiles 660210 and CI5789 both are described as "cyanide containing wastes." While both profiles list cadmium cyanide as a possible constituent, Veolia uses a value of 6,470 mg/kg cadmium for profile CI5789 and 1 mg/kg cadmium for profile 660210. Since these are very similar waste streams generated by different generators, Veolia should analyze these variable waste streams each time they arrive on-site. Profile 374339 is another example of overly broad profiling. Profile 374339 is organic debris, and the metals concentrations in the waste loads could vary greatly.
- **Conflicting metals data**: NEIC identified the presence of conflicting metals data between the profile package and the information in the WTS and ICS. For profile 236152, an MSDS contained in the profile package listed the chromium concentration as "3 to 6 percent chromium as chromium oxide" (30,000 to 60,000 mg/kg), while the ICS used a value of 228 mg/L for this profile. The profile package for 691163 has a TCLP value for chromium of 1.8 mg/L, while the WTS and ICS used a value of 0 mg/L. The profile package for AF3753 has a total mercury value of 4140 mg/kg (TCLP value of 37.8 mg/L), but the WTS and ICS used a value of 25 mg/kg for at least 5 years. Having conflicting values between profile packages and databases, without a clear indication as to which value is correct, could lead to the use of incorrect metals concentrations for feed rate calculations.

Additionally, Veolia has several profiles that contain metals results identical to those used in other profiles. There is a concern regarding insufficient testing of incoming wastes under these profiles: Table 5 shows the number of times that a "pattern" of metals values was repeated for different profiles that were received in quantities greater than 20,000 pounds in 2010 and 2011. There are several times when a profile initially matches the metals values of several other profiles at one point in time, and then the metal values change and match the metals values of several other different profiles.

Table 5. SUMMARY OF REPEATING METALS CONCENTRATIONS FOR WASTE RECEIPTS GREATER THAN 20,000 POUNDS PER YEAR
Veolia ES Technical Services
Sauget, Illinois

Number of Profiles With Same Metals Concentrations	Pounds Received in 2010	Repeating Constituents (mg/kg)					
		Arsenic	Beryllium	Cadmium	Chromium	Lead	Mercury
21	192058	5	5	263.8	5	21.6	0
15	187229	78	5	23	139	433	0
4	144905	0	0	0	2.5	0	0
18	45415	5	5	5	5	5	0
49	43950	200	5	5	38	5	0
9	43248	0	0	0	5	0	0
7	42730	12	5	5	26	5	0
6	40912	26	10	20	50	100	0
21	30065	0	0	0	0	5	0
6	20324	5	0	5	5	5	0

NEIC examined the number of times that two of the profiles that contained repeating metals concentrations were analyzed by Veolia. The profiles examined were CARBN1 and SOL005. Veolia provided NEIC with a database containing the number of times each of these profiles was received during the period of June 2009 through June 2012. The database also listed the waste receipts that were analyzed for metals. For profile CARBN1, Veolia received 330 waste loads (receipts). Of the 330 receipts, 19 were analyzed for metals. As shown in Table 6, 12 of the 19 loads analyzed were on waste loads received after December 2011, which is more than two times the number of loads analyzed in the previous 2 years. No analyses were conducted on the 56 waste loads received in 2009 and the 112 waste loads received in 2010. This data is summarized in Table 6.

Table 6. SUMMARY OF LOADS RECEIVED AND ANALYZED FROM JUNE 2009 TO JUNE 2012 FOR STANDARD PROFILE CARBN1 AND SOL005
Veolia ES Technical Services
Sauget, Illinois

Profile CARBN1		Profile SOL005	
Number of receipts between 6/2009 and 6/2012	330	Number of receipts between 6/2009 and 6/2012	264
Number of receipts not analyzed	311	Number of receipts not analyzed	244
Number of receipts analyzed between 6/2009 and 6/2012	19	Number of receipts analyzed between 6/2009 and 6/2012	20

SUMMARY OF WHEN LOADS WERE ANALYZED FROM JUNE 2009 TO JUNE 2012 FOR STANDARD PROFILE CARBN1 AND SOL005
Veolia ES Technical Services
Sauget, Illinois

Profile CARBN1		Profile SOL005	
Month and Year Load Receipt Analyzed	**Number of Receipts Analyzed**	**Month and Year Receipt Analyzed**	**Number of Load Receipts Analyzed**
January 2011	1	July 2011	1
March 2011	1	February 2012	5
April 2011	5	March 2012	3
December 2011	1	April 2012	7
January 2012	11	May 2012	4

Veolia provided NEIC with all analysis results for profile CARBN1. One of the load receipts (received on April 8, 2011) that was sampled and analyzed on June 9, 2011, had a chromium concentration of 99,780 mg/kg, while the standard value for chromium is 139 mg/kg chromium for CARBN1 waste streams. There is a concern that standard profiles such as CARBN1, which has the potential to have such significant differences in chromium concentrations, are not adequately representing the waste streams or being analyzed regularly enough to detect variability in the waste. Only 19 of the 330 total CARBN1 loads received in a 3-year period (June 2009 to June 2012) were sampled and analyzed for metals, and all of these 19 analyzed loads were since January 2011. The use of overly broad standard profiles could lead to incorrect metals values being used to calculate the feed rate requirements for the incinerator.

Figure 2 is a flowchart that summarizes analysis categories (exempt from analysis, mandatory analysis, or supplemental analysis) for all the profiles received from January 1, 2011, through December 15, 2011. Of the 1,197 profiles received in 2011 that required mandatory on-site analysis, 881 of these profiles were not analyzed for metals as of the NEIC inspection. This is roughly 73 percent of the profiles received that require mandatory sampling.

Figure 2
Summary of Waste Analysis Categories for profiles Received in 2011
Veolia ES Technical Services – Sauget, Illinois

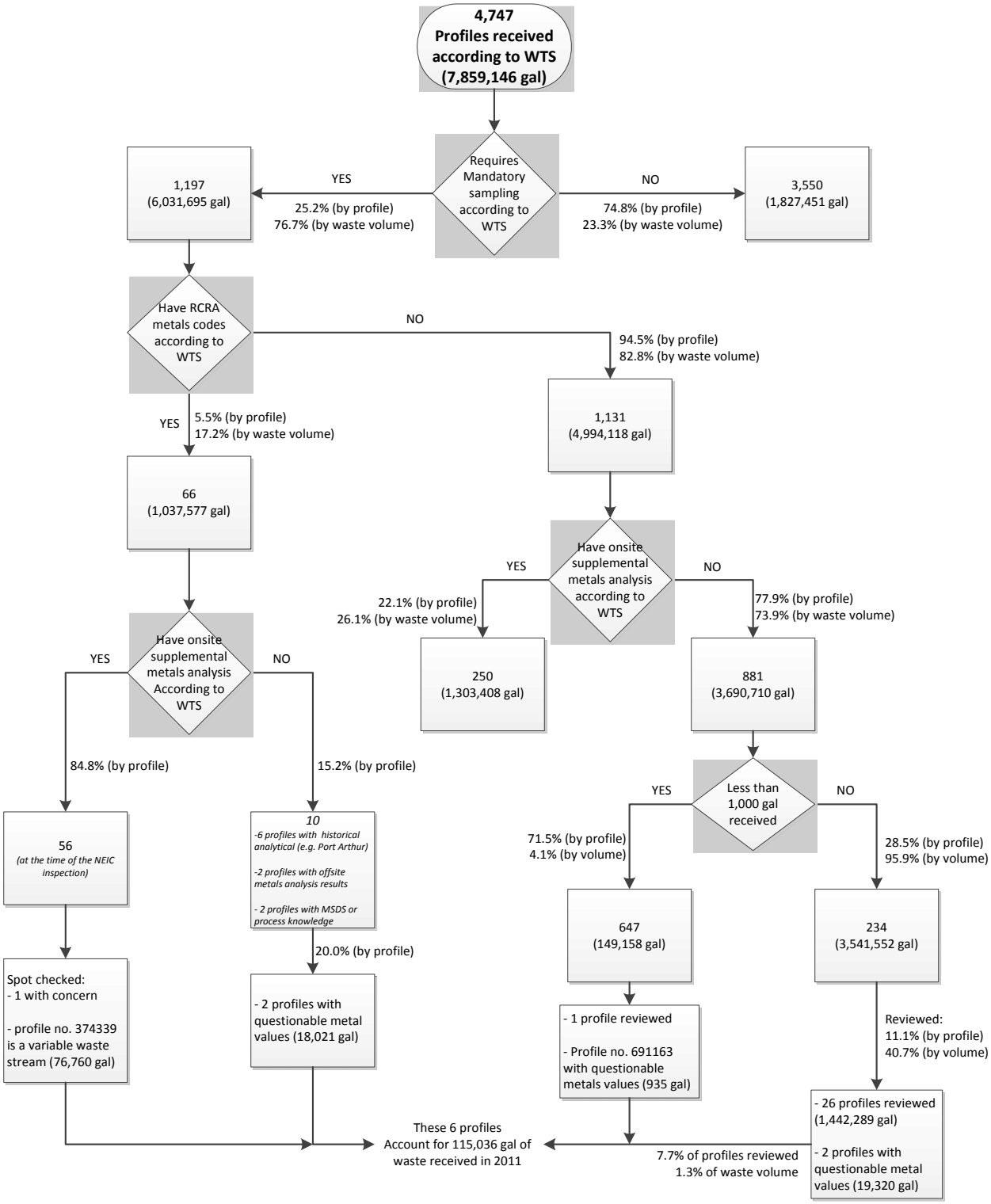

Figure 2. Summary of Waste Analysis Categories for Profiles Received in 2011
Veolia ES Technical Services
Sauget, Illinois

SUMMARY OF OBSERVATIONS

The following observations were made at the time of the inspection, and during review of documents received prior to, during, and after NEIC's inspection of the Veolia facility. The observations pertain to areas or issues identified by NEIC that may have potential compliance implications, but are neither inclusive nor exclusive of all such potential areas or issues. Observations included potential problems/activities that could impact the environment, result in future noncompliance with permit or regulatory requirements, and/or are areas associated with pollution prevention issues. U.S. EPA Region 5 will assess the applicability of regulatory requirements based on its review of this report and other technical, regulatory, and facility information.

RESOURCE CONSERVATION AND RECOVERY ACT

#	Observations/Areas of Concerns
1	1. On at least two waste profiles, Veolia used TCLP concentrations instead of total metals concentrations. 2. Overly broad waste categories listed in profiles.
2	1. Veolia is not analyzing the metals values for the ash from incinerators 2 and 3 at an evaluation frequency that adequately characterizes the waste per the FAP requirements. 2. Conflicting metals values are present in several profile packages (236152, 691163, and AF3753), with no clear indication of which metal values appropriately characterize the waste per the FAP requirements.
3	ICP analysis of metals – The automatic background and overlap corrections applied by the Veolia's ICP software were observed to result in large negative peaks when unknown constituents were present in the sample. Veolia personnel do not measure all major elements in samples to identify and correct for potential negative interferences.
4	Profile AF3753 is a debris waste stream from veterinary pharmaceutical manufacturing. In the profile package, there was a total mercury analytical value of 4,140 ppm. If this concentration were present in the waste that was incinerated on August 28 and 29, 2011, the emissions and feed rate limits for mercury would have been exceeded.